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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Michael Christopher FRIEL et al.
Int. Appln. No.: PCT/GB00/00068
Int. Filing Date: January 11, 2000
Title : A COMBINED INSECT REPELLENT AND SUNSCREEN COMPOSITION

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Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Prior to examination, kindly amend this application as follows:

In the claims:

Cancel claims 1 through 15.

The claims now in this application are set forth on the following pages 2-9.

In the abstract:

Attached hereto, as a page numbered 15, is an Abstract of the Disclosure.

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WE CLAIM:

16. A method of manufacturing a sunscreen composition including one or more insect repellents, one or more organic UV sunscreens agents and one or more inorganic sunscreens agents, said composition being in the form of an emulsion having an oil phase and an aqueous phase, in which method the aqueous phase and the oil phase are separately prepared and then combined to form an emulsion prior to addition of the inorganic sunscreens agents.

17. A method of manufacturing a sunscreen composition which comprises the steps of:

preparing an aqueous phase including water and a thickener;

preparing an oil phase including at least two emulsifiers, a least one insect repellent and at least one organic UV sunscreens agent;

combining the aqueous phase and the oil phase to form an emulsion; and

adding to the emulsion at least one inorganic sunscreens agent.

18. A method of manufacturing a sunscreen composition in the form of an oil-in-water emulsion which comprises the steps of:

preparing an aqueous phase by combining water and a thickener while stirring and heating;

preparing an oil phase by combining at least two emulsifiers, at least one insect repellent, and at least one organic UV sunscreens agent while stirring and heating;

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adding the oil phase to the aqueous phase while stirring, thereby forming an emulsion; and

addition to the emulsion at least one inorganic suncreening agent while stirring.

19. The method of claims 18 wherein the oil phase additionally includes a film former.

20. A method of manufacturing a sunscreen composition in the form of an oil-in-water emulsion which comprises the steps of:

preparing an aqueous phase by combining at least two emulsifiers, at least one insect repellent, a film former and at least one organic UV suncreening agent while stirring and heating;

adding the oil phase to the aqueous phase while stirring, thereby forming an emulsion;

adding to the emulsion a chelating agent and a neutraliser; and

adding to the emulsion at least one inorganic suncreening agent while stirring.

21. The method of claim 19 or 20 wherein the aqueous phase and the oil phase are each heated to a temperature in the range of 75-80°C prior to the oil phase being added to the aqueous phase.

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22. The method of claim 21 wherein at least two emulsifiers are selected from the group consisting of fatty acid ethoxylates, fatty alcohol ethoxylates, fatty alcohols and blends of fatty alcohol ethoxylates with alkyl phenol ethoxylates.

23. The method of claim 21 wherein at least two emulsifiers are selected from the group consisting of glycerol monostearate, ethoxy stearyl alcohol, C₁₆₋₁₈ fatty alcohols and blends of cetostearyl alcohol and PEG stearate..

24. The method of claim 19 or 20 wherein the inorganic sunscreens agent is selected from the group consisting of zinc oxide, titanium dioxide and mixtures thereof.

25. The method of claim 24 wherein the inorganic sunscreens agents is micronised zinc oxide or micronised titanium dioxide.

26. The method of claim 25 wherein the sunscreens agent is micronised titanium dioxide.

27. The method or claim 19 or 20 wherein the insect repellent is N, N-diethyl-m-toluamide, dipropylpyridine-2,5-dicarboxylate or a mixture thereof.

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28. The method of claim 19 or 20 wherein the organic UV sunscreens agent is oxybenzone, octylmethoxycinnamate or a mixture thereof.

29. The method of claim 18 wherein the sunscreen composition comprises (a) from 3 to 9% by weight of at least two emulsifiers.

30. The method of claim 29 wherein the composition comprises,

- (b) from 1 to 5% of the inorganic sunscreens agent,
- (c) from 4 to 20% of the insect repellents and
- (d) from 3 to 10% of one or more organic UV sunscreens agents.

31. The method of claim 30 wherein the composition comprises

- (b) from 2 to 4% of the inorganic sunscreens agent, and
- (c) from 5 to 10% of insect repellents.

32. The method of claim 29 or 30 wherein the composition comprises (a) 7% in total of emulsifiers and further comprises

- (e) up to 5% of a film former,
- (f) up to 0.25% of a thickener,

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- (g) up to 0.3% of a neutraliser,
- (h) up to 0.3% of a chelating agent, and
- (i) up to 2.5% of at least one of a preservative, a perfume and a moisturizer.

33. The method of claim 32 wherein the composition comprises

- (e) from 1 to 5% of film former,
- (f) from 0.05 to 0.25% of thickener,
- (g) from 0.1 to 0.3% of neutraliser, and
- (h) from 0.1 to 0.3% of chelating agent.

34. A sunscreen composition in the form of an oil-in-water emulsion which comprises one or more insect repellents, one or more organic UV suncreening agents, one or more inorganic sunscreening agents and at least two emulsifiers, said sunscreen composition manufactured by a method which comprises the steps of:

preparing an aqueous phase by combining water and a thickener while stirring and heating to a temperature in the range of 75 to 80°C;

preparing an oil phase by combining the emulsifiers, the insect repellents and the organic UV suncreening agents while stirring and heating to a temperature in the range of 75 to 80°C;

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adding the oil phase to the aqueous phase while stirring, thereby forming an emulsion; and

adding to the emulsion the inorganic sunscreens, while stirring.

35. The sunscreen composition according to claim 34 in which, in the method, the oil phase additionally includes in a film former.

36. The sunscreen composition according to claim 35 in which the method includes the additional step of adding to the emulsion a chelating agent and a neutraliser.

37. The sunscreen composition according to claim 36 in which the emulsifiers are selected from the group consisting of fatty acid ethoxylates, fatty alcohol ethoxylates, fatty alcohols and blends of fatty alcohol ethoxylates with alkyl phenol ethoxylates.

38. The sunscreen composition according to claim 36 in which the emulsifiers are selected from the group consisting of glycerol monostearate, ethoxy stearyl alcohol, C₁₆₋₁₈ fatty alcohols and blends of cetostearyl alcohol and PEG stearate.

39. The sunscreen composition according to claim 36 in which the inorganic sunscreens agent is selected from the group consisting of zinc oxide, titanium dioxide and mixtures thereof.

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40. The sunscreen composition according to claim 39 in which the sunscreeing agent is micronised titanium dioxide.

41. The sunscreen composition according to claim 36 in which the insect repellent is N,N-diethyl-m-toluamide, dipropylpyridine-2,5-dicarboxylate or a mixture thereof.

42. The sunscreen composition according to claim 36 in which wherein the organic UV sunscreening agent is oxybenzone, octylmethoxycinnamate or a mixture thereof.

43. The sunscreen composition according to claim 34 which comprises (a) from 3 to 9% by weight of the emulsifiers.

44. The sunscreen composition according to claim 43 which comprises

- (b) from 1 to 5% of the inorganic sunscreening agent,
- (c) from 4 to 20% of the insect repellents, and
- (d) from 3 to 10% of one or more organic UV sunscreening agents.

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45. The sunscreen composition according to claim 44 which comprises

- (b) from 2 to 4% of the inorganic suncreening agent, and
- (c) from 5 to 10% of insect repellents.

46. The sunscreen composition according to claim 44 or 45 which comprises

(a) 7% in total of the emulsifiers and further comprises:

- (e) up to 5% of a film former,
- (f) up to 0.25% of a thickener,
- (g) up to 0.3% of a neutraliser,
- (h) up to 0.3% of a chelating agent, and
- (i) up to 2.5% of at least one of a preservative, a perfume and a moisturizer.

47. The sunscreen composition according to claim 46 which comprises:

- (e) from 1 to 5% of a film former,
- (f) from 0.05 to 0.25% of a thickener,
- (g) from 0.1 to 0.3% of a neutralizer, and
- (h) from 0.1 to 0.3% of a chelating agent.

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REMARKS

Claims 1 through 15 have been cancelled and have been replaced by claims 16 through 47.

Respectfully submitted,

Date: 11 July 2001

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CLAIMS

1. A method of manufacturing a sunscreen composition including one or more insect repellents, one or more organic
5 UV sunscreens agents and one or more inorganic sunscreens agents, the composition being in the form of an emulsion having an oil phase and a water phase characterised in that the water phase and oil phase are prepared and combined to form an emulsion prior to addition of at least
10 one inorganic compound which is used as a sunscreens agent.
2. A method of manufacturing a sunscreen composition including the steps of:
15 (a) preparing a water phase including water and thickener;
(b) preparing an oil phase including at least two emulsifiers, at least one insect repellent and at least one organic UV sunscreens agent;
(c) combining said water phase and oil phase to form an
20 emulsion; and
(d) adding at least one inorganic compound which is used as a sunscreens agent.
3. A method of manufacturing a sunscreen composition in
25 the form of an oil-in-water emulsion including the steps of:
(a) preparing a water phase by combining water and thickener while stirring and heating,
(b) preparing an oil phase by combining at least two emulsifiers, at least one insect repellent, optionally
30 a film former and at least one organic UV sunscreens agent while stirring and heating,

(c) adding the oil phase to the water phase while stirring,
(d) optionally adding a chelating agent and a neutraliser
to the combined water and oil phases; and
(e) adding at least one inorganic compound which is used as
a sunscreensing agent to the combined water and oil
phases while stirring.

4. The method of claim 3 wherein the water phase of step
(a) and the oil phase of step (b) are heated to a
temperature in the range of 75-80°C respectively before
combining in step (c).

5. The method of any one of claims 2 to 4 wherein at least
two emulsifiers are selected from the group consisting of
fatty acid ethoxylates, fatty alcohol ethoxylates, fatty
alcohols and blends of fatty alcohol ethoxylates with alkyl
phenol ethoxylates.

6. The method of any one of claims 2 to 4 wherein at least
two emulsifiers are selected from the group consisting of
glycerol monostearate, ethoxy stearyl alcohol, C₁₆₋₁₈ fatty
alcohols and blends of cetostearyl alcohol and PEG stearate.

7. The method of any one of claims 1 to 6 wherein the
inorganic compound is zinc oxide or titanium dioxide,
preferably micronised zinc oxide or micronised titanium
dioxide, most preferably micronised titanium dioxide.

8. The method of any one of claims 1 to 7 wherein the
insect repellent is N,N-diethyl-m-toluamide,
dipropylpyridine-2,5-dicarboxylate or a mixture thereof.

9. The method of any one of claims 1 to 8 wherein the organic UV sunscreens agent is oxybenzone, octylmethoxycinnamate or a mixture thereof.

10. The method of any one of claims 1 to 9 wherein the composition includes 3-9% by weight in total of at least two emulsifiers, based on the total weight of the composition.

11. The method of claim 10 wherein the composition includes by weight, based on the total weight of the composition,

- (a) 1-5%, preferably 2-4%, more preferably 3% inorganic compound as a sunscreens agent,
- (b) 4-20%, preferably 4-15%, more preferably 5-10% insect repellent and
- (c) 3-10% each of one or more organic UV sunscreens agents.

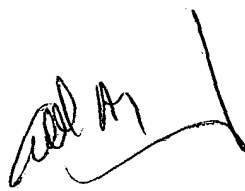
12. The method of claim 10 or 11 wherein the composition further includes:

- (d) 7% in total emulsifiers
- (e) up to 5%, preferably 1-5%, more preferably 3% film former
- (f) up to 0.25%, preferably 0.05-0.25%, more preferably 0.15% thickener.
- (g) up to 0.3%, preferably 0.1-0.3%, more preferably 0.15% neutraliser
- (h) up to 0.3%, preferably 0.1-0.3%, more preferably 0.2% chelating agent
- (i) up to 2.5% of at least one of preservative, perfume and moisturiser.

13. A sunscreen composition manufactured according to the method of any one of claims 1 to 12.

5 14. A sunscreen composition, including at least two emulsifiers as hereinbefore described with reference to the examples.

15. A method of manufacturing a sunscreen composition as
10 hereinbefore described with reference to the examples.



Abstract of the Disclosure

A sunscreen composition includes one or more insect repellants, one or more organic UV sunscreens agents, one or more inorganic sunscreens agents, and at least two emulsifiers comprising 3 to 9% of said composition.

- 5 The composition is an oil-in-water emulsion in which the phases are separately prepared and the inorganic sunscreens agent is not added until after the phases have been combined. The preferred inorganic sunscreens agent is titanium dioxide. The preferred insect repellants are N,N-diethyl-m-toluamide and dipropyl pyridine-2,5-dicarboxylate.